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September 29, 2004

Mary L. Cottrell, Secretary
Department of Telecommunications and Energy
One South Station, 2nd Floor
Boston, MA 02110

Re: New England Gas Company, D.T.E. 04-6

Dear Ms. Cottrell:

Please find attached the Initial Brief of New England Gas Company in the above-referenced proceeding.

Thank you for your attention to this matter.

Very truly yours,

Cheryl M. Kimball

Encl.
cc: Jody Stiefel, Hearing Officer
Wilner Borgella, Assistant Attorney General
Service List

COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

New England Gas Company	)	D.T.E. 04-06

BRIEF OF NEW ENGLAND GAS COMPANY

I. INTRODUCTION

On December 30, 2003, in accordance with G.L. c. 164, § 69I et seq., New England Gas Company (the "Company") filed with the Department of Telecommunications and Energy (the "Department") its Long-Range Forecast and Supply Plan for the Fall River and North Attleboro service territories for the five-year period 2003/2004 through 2007/2008 (the "Supply Plan"). The Attorney General and the Division of Energy Resources intervened in the proceeding and the Department conducted evidentiary hearings in the case on September 8, 2004.

The Company presented four witnesses: James L. Harrison, vice-president and principal with Management Applications Consulting, Inc. ("MAC"); Debbie Gajewski, vice-president and principal with MAC; Gary L. Beland, Director of Gas Supply for the Company; and Peter C. Czekanski, Director of Gas Pricing for the Company. The evidentiary record consists of 100 exhibits and three responses to record requests.

As a result of the recent corporate union of North Attleboro Gas Company and Fall River Gas Company, a unique opportunity was created to consolidate the forecast and supply plans of North Attleboro and Fall River into a single long-range forecast and supply plan for both service areas. With the integration of supply-planning activities, the Company is in a position to manage the gas-supply resources of the two service areas and

to coordinate the dispatch of those resources on a combined basis to enhance reliability and improve the cost effectiveness of the overall resource portfolio (Exh. NEGC-1, at 1). The Supply Plan completes a major step in the integration process through the use of a single forecast and supply plan analysis based on a single set of planning standards for the forecast period.

The Company's Supply Plan in this case complies with the Department's well-established forecast and supply plan requirements under G.L. c. 164, § 69I. The Company's forecast was based on an econometric forecast of gas demand that employed a detailed multiple regression analysis. The statistical results associated with the forecast demonstrate the model's strong predictive power and reliability in accurately representing future customer demands for gas over the five-year forecast period. In addition, as described infra, the Company quantitatively assessed and selected appropriate and cost-effective design-day and design-year planning standards based on a detailed study performed by MAC. The Company's filing demonstrates that, over the five-year forecast period, it has adequate resources to meet its firm customers' demand under normal, design-year, design-day weather conditions.

II. BACKGROUND

The New England Gas Company was organized in 2000, following the mergers of Providence Energy Company (the parent company of Providence Gas Company and North Attleboro Gas Company), Valley Resources, Inc. (the parent company of Valley Gas Company and Bristol and Warren Gas Company), and the Fall River Gas Company with Southern Union Company ("Southern Union") (Exh. NEGC-1, at 1). Today, the regulated distribution companies involved in those mergers operate as a single division of

Southern Union, serving approximately 240,000 customers in Rhode Island and approximately 50,000 customers in Massachusetts. Of the 50,000 customers served in Massachusetts, there are approximately 4,000 customers in the North Attleboro service area and 46,000 customers in the Fall River service area (Exh. NEGC-1, at). In the split year 2001/2002 (November 1, 2001 through October 31, 2002), the Company had an average of 45,859 residential heating customers, 3,662 residential non-heating customers, 987 high-load factor commercial and industrial customers, and 2,807 low-load factor commercial and industrial customer (id., Tables G-1 to G-3B). The Company had an average of 162 firm transportation customers in the split year 2001-2002.

All pipeline and storage supplies are currently delivered to the Company on the Algonquin pipeline system, with city-gate deliveries via Algonquin's G system (Exh. NEGC-1, at 33).

The Company's filing includes a number of improvements over earlier Company forecasts and supply plans. These improvements include: (1) the integration of the supply planning process for the Fall River and North Attleboro service areas; (2) the use of the most recent 20 years of historical weather data to establish design year and design day standards; (3) the performance of a quantitative cost/benefit analysis to establish design planning standards; (4) the application of the SENDOUT model to both Fall River and North Attleboro service territories to assess design-year and design-day dispatching constraints; and (5) the incorporation of a newly implemented demand-side management ("DSM") program in the North Attleboro service area, which was approved by the Department in North Attleboro Gas Company, D.T.E. 02-36 (2002) (Exh. NEGC-1, at 3-5).

The Company's forecasts of sendout by customer class are contained in Exh. NEGC-1, Schedule 4-1 through Schedule 4-5. The Company projects a small increase in its total firm Company sendout (without transportation volumes) over the forecast period from 6,746,483 dekatherms ("Dth") in 2003-2004 to 6,793,845 Dth in 2007-2008 (Schedule 2-5, page 2). On February 28, 2002, the Department approved North Attleboro Gas Company's most recent Load Forecast and Resource Plan, for the period November 1, 2000 through October 31, 2006. North Attleboro Gas Company, D.T.E. 01-47 (2002). The most recent Order approving Fall River Gas Company's Load Forecast and Resource Plan was issued on July 25, 2000. Fall River Gas Company, D.T.E. 99-26 (2000).

III. THE SENDOUT FORECAST

A. The Company's Sendout Forecast Methodology Is Reviewable, Appropriate and Reliable

The Department is directed by G.L. c. 164, § 69I to review the sendout forecast of each gas utility to ensure that the forecast accurately projects the sendout requirements of the utility's market area. NSTAR Gas Company, D.T.E. 02-12, at 2 (2003). The Department's regulations require that the forecast exhibits accurate and complete historical data and reasonable statistical projections methods. Id., citing 980 C.M.R. 7.02(9)(b).

The Department evaluates gas sendout forecasts by applying three criteria. First, a forecast is reviewable if it contains enough information to allow a full understanding of the forecasting methodology. Second, a forecast is appropriate if the methodology used to produce the forecast is technically suitable to the size and nature of the utility that produced it. Third, a forecast is reliable if the methodology provides a measure of

confidence that its data, assumptions, and judgments produce a forecast of what is most likely to occur. North Attleboro Gas Company, D.T.E. 01-47, at 2 (2002), citing Colonial Gas Company, D.P.U. 96-18, at 5 (1996); Baystate Gas Company, D.P.U. 93-129, at 5 (1996); Holyoke Gas and Electric Department, D.P.U. 93-191, at 2 (1996); and Haverhill Gas Company, 8 DOMSC 48, at 50-51 (1982). As described in further detail below, the Company has demonstrated that its sendout forecast methodology is reviewable, appropriate and reliable.

B. Planning Standards

The Company's planning standards are used as a basis for projecting the Company's sendout requirements under design-weather conditions. The Company's development of its planning standards began with an analysis of relevant weather data. The Company used this weather data to generate a normal-year standard, design-year standard and design-day standard.

The Company derived its normal-year standard based on the average annual degree days for the most recent 20-year period (ending September 30, 2003) (Exh. NEGC-1, at 8).[1] The average number of Effective Degree Days ("EDDs") for each month in this same period was computed. Then, a typical month whose total degree days were similar to the 20-year average of each month was selected. Because the sum of the degree days in these typical months did not exactly match the 20-year average, the sum of the daily values was prorated to exactly match the 2-year average for the month (id.).

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[1] The Department has required the use of a 20-year period of weather data to develop a normal-year standard in North Attleboro Gas Company, D.T.E. 01-47, at 6-7 (2002) and Fall River Gas Company, D.T.E. 99-26, at 5-6 (2000).

These prorated values were the proxy for the daily heating degree days for the normal year.

In this Supply Plan, MAC analyzed and developed the Company's design planning standards based on a cost-benefit analysis, which quantified the incremental costs that would be incurred to ensure sufficient citygate supplies would be available to serve customers, and compared these costs to the societal costs that would be expected to result from an outage if those supplies were not available (Exh. NEGC-1, at 10). The design-year planning standard represents the point at which equilibrium is established between the higher cost of reliability and the societal cost of increased outages (id.).

Based on the results of the cost-benefit analysis, the Company identified a reasonable and cost-effective design-year planning standard of weather than occurs with a frequency of once in 58 years ("1:58") (Exh. NEGC-1, at 10-15, Schedule 2-3 and Schedule 2-4). A 1:58 design-year standard results in a 6,996 EDD design year (6,170 heating season plus 826 EDD non-heating season) (Exh. NEGC-1, at 9-10).

Similar analyses performed by MAC concerning the Company's design-day planning standard indicate that a once in 51 year recurrence probability (equivalent to 74.4 degree days) is reasonable and appropriate (Exh. NEGC-1, at 15). The Company used the average and standard deviation of the peak day observed over the last 20 years as the distribution function to establish the 1:51 probability of occurrence (Exh. DTE-2-52).

C. The Demand Forecast

To project customers' total gas demand for the forecast period, the Company formulated econometric forecasts of the demand for gas for each of the following four classes: (i) Residential Regular; (ii) Residential Heating; (iii) Commercial and Industrial

Low Load Factor including Transportation; and (iv) Commercial and Industrial High Load Factor including Transportation (Exh. NEGC-1, at 25). These separate class forecasts were then added to obtain a Company-wide profile of gas demand over time.[2]

The Company's econometric models projected customer numbers and average usage values per customer based on detailed regression analyses using available historical and projected economic and demographic data applicable to the Company's service territory (id. at 26-28; Exh. DTE-2-10; Exh. DTE-2-17). The Company added Company Use gas volumes to the product of each classes forecast of the number of customers and each class's respective gas use levels (Dth/customer) to generate gas-year sales projections over the forecast period (Exh. NEGC-1, at 25).

The final sales projections were reduced by the conservation and load management projections taken from the Company's 2003-2007 Annual Conservation Projections (id. at 26). The energy savings from the individual programs approved by the Department in Fall River Gas Company, D.T.E. 01-30 (2001) were included in the Supply Plan (Exh. DTE-2-15). The Company's forecast indicates slight load growth over the forecast period, which is expected to increase at an annual rate of approximately 0.1 percent per year over the five-year forecast period (Exh. NEGC-1, at 29).

To perform the required regression analyses, the Company relied on available operating statistics together with other externally available demographic and economic

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[2] The Company's forecast represents its "Planning Load," which represents all firm sendout less (1) transportation load in place prior to February 1, 1999, which is exempt from the Company's capacity-assignment program; and (2) transportation loads associated with customers who are new to the system and become transportation customers rather than sales customers (Exh. NEGC-1, at 5-6). The Company forecasts that the total number of transportation customers will remain constant at August 2003 levels (i.e., any new customer growth or migration from sales service to transportation service will be offset by reverse migration (customers returning to sales service) (Exh. DTE-2-18; Exh. DTE-2-24).

data describing the Company's service territory for the period from 1992 through August 2003 (Exh. NEGC-1, at 24). Economic forecasting databases, including the databases used by MAC in this case, typically contain numerous operating statistics, such as number of customers, gas use levels, sales, and prices as well as various local, regional and national data series (Exh. NEGC-1, at 27; see also Exh. DTE-2-65).

MAC developed and tested numerous regression specifications. Separate econometric models of gas sales volumes and number of customers were developed by regressing each dependent variable (i.e., gas sales or number of customers) against certain logical causal independent variables, including the number of households, personal income, employment, fuel prices and EDD (Exh. NEDG-1, at Vol. II, Exhibit A). In addition, "dummy variables" were used in the regressions to account for structural changes (i.e., reclassification of accounts, timing of retail restructuring) and/or anomalous outliers in the historical data (i.e., abnormally high or low values). Those specifications that showed statistical significance, explained most of the variation in the dependent variable, presented logical causal relationships, and provided sound forecasts were retained (Exh. DTE-2-9(d)).

As shown in Exhibit NEGC-1, Volume 2, Appendix VI, 13 each equation was evaluated with a broad range of statistical criteria including a high adjusted R^2, proper sign and reasonable magnitude of coefficients, the t-statistics associated with each independent variable, and the residuals of the equations (Exh. DTE-2-28). As a result of an identified level of serial correlation, MAC applied an empirical calibration (i.e., an

adjustment factor) to the forecast (Tr. 1, at 22).[3] This correction factor was designed to compensate for the impact of the correlation among model residuals and had the effect of lowering the total Company sendout forecast by approximately 2.5 percent (Tr. 1, at 23; Exh. DTE-2-43; Exh. RR-DTE-1).

At the Department's request, the Company also incorporated a Cochrane-Orcutt adjustment to the linear models to eliminate the observed serial correlation (Exh. RR-DTE-1). As indicated in Record Request DTE-1-1, the resulting forecasts (the "Transformed Models") are methodologically comparable to the base case forecast provided in response to Exhibit DTE-4-1. However, the Transformed Models, which incorporate the Cochrane-Orcutt adjustment, reduce the otherwise forecasted level of sendout by only three-quarters of a percent, (Tr. At 23; Exh. RR-DTE-1-1). This means that there is only a difference of 1¾ percent between the Company's forecast and the Cochrane-Orcutt adjusted forecast, which is a de minimis amount. Therefore, the Company believes that reliance on the purely statistical Cochrane-Orcutt transformation technique could result in a requirement for additional resources that the Company believes is unnecessary (and beyond the level that was found to be adequate to serve customers during the severe weather conditions observed this past winter) (Exh. RR-DTE-1).

A sensitivity analysis was also performed using low-case and high-case scenarios (Exh. NEGC-1, at 28). The low-case scenario assumed zero growth in population,

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[3] From a statistical perspective, it is unclear whether the presence of serial correlation is the result of non-linear response, a mis-specification of the independent variable(s), or the omission of an explanatory variable (Exh. DTE-2-43).

personal income and employment, a 10 percent increase in gas prices, and a 10 percent decrease in oil prices over those used in the base-case analysis (Exh. NEGC-1, at 28).

D. Conclusion

The Company provided a detailed and systematic explanation of the econometric forecasting methodology together with comprehensive and reliable results based on that methodology. The Company's use of multiple regression analyses to forecast its gas sendout requirements over the forecast period represents a reasonable statistical projection methodology which is reviewable, appropriate and reliable. In addition, the Company performed an extensive analysis of its weather database, which included a probabilistic analysis, to establish its design weather planning standards. Accordingly, the Department should approve the Company's demand forecast.

IV. SUPPLY ISSUES

A. Standard of Review

The Department reviews a gas company's five-year supply plan to determine whether the plan is adequate to meet projected normal-year, design-year, design-day and cold-snap firm sendout requirements. North Attleboro Gas Company, D.T.E. 01-47, at 23 (2002). The Department's review of reliability, another necessary element of a gas company's supply plan, is included in the Department's consideration of adequacy. Id. In order to establish adequacy, a gas company must demonstrate that it has an identified set of resources that meets its projected sendout under a reasonable range of contingencies. Id.

The Department also reviews a gas company's overall supply planning process. An appropriate supply planning process requires the development of an adequate, low-cost and low-environmental-impact resource plan. Id. at 24. Pursuant to this standard, a

gas company must establish that its supply planning process enables it to identify and evaluate a full range of supply options, and compare all options on an equal basis. Id., citing. Id. citing Colonial Gas Company, D.P.U. 96-18, at 31; Commonwealth Gas Company, D.P.U. 92-159, at 54; Colonial Gas Company, D.P.U. 93-13, at 51; Boston Gas Company, 25 DOMSC 116, at 202 (1992). The Department also reviews whether a gas company's five-year supply plan minimizes cost. A least-cost supply plan is one that minimizes cost subject to trade-offs with adequacy and environmental impact. D.T.E. 01-47, at 24, citing Commonwealth Gas Company, D.P.U. 92-159, at 55; Colonial Gas Company, D.P.U. 93-13, at 51-52; Boston Gas Company, 25 DOMSC 116, at 203 (1992). As described below, the Company's supply plan and supply planning process meets all of the above requirements.

B. Adequacy of the Company's Supply Portfolio

1. Normal-Year and Design-Year Adequacy

The Company has adequate resources to meet its projected sendout requirements for both a normal-and design-year throughout the forecast period (id. at 39-40; Schedule 5-6, Table G-22N and Table G-22D). During a design year, the Company would rely more heavily on pipeline and supplemental supply resources to meet its heating season requirements (id.).

2. Design-Day Adequacy

The Company has sufficient supply capacity to meet its firm customers' design-day sendout requirements for each year of the forecast period (Exh. NEGC-1, at 39). The elements of the Company's supply portfolio that would be used under design-day conditions for each year of the forecast period are shown in Exh. NEGC-1, at Schedule 5-7 (Table G-23).

3. Cold-Snap Analysis

As described above, the Company's winter design standard incorporates a ten-day cold snap that is based on the ten consecutive days with the greatest total heating degree-days from the Company's available data (Exh. NEGC-1, at 18-19). The dispatch of the Company's supply model for design weather conditions demonstrates its ability to supply an extraordinary cold snap period adequately and reliably (id. at 40).

4. Growth-Scenario Analysis

The Company created a Low and High Demand Growth Scenario to reflect altered projections of key economic and demographic variables used in the econometric forecasting models (Exh. NEGC-1, at 28; Exh. DTE-2-20). The low-case scenario assumed zero growth in population, personal income and employment, a 10 percent increase in gas prices, and a 10 percent decrease in oil prices over those used in the base-case analysis (id.). The high-case scenario assumed that the growth in population, personal income, and employment would double the base-case predictions, and that a 10 percent decrease in gas prices and a 10 percent increase in oil prices would occur (Exh. NEGC-1, at 28; Exh. DTE-2-21).

A summary of the dispatch-model output comparing resources and requirements under a low-demand scenario for each year of the forecast is provided in Schedule 5-13. These comparisons show that, under the low-demand scenario, the resource portfolio is adequate to serve all design year and design day requirements over the forecast period (Exh. NEGC-1, at 40). A summary of the dispatch-model output comparing resources and requirements under a high-demand scenario for each year of the forecast is shown in Schedule 5-12. These comparisons show that under the high-demand scenario, the

resource portfolio is adequate to serve the design year and design day requirements through the entire forecast period.

C. The Company's Supply Planning Process

The Company's supply planning process is designed to develop a resource plan that achieves a reliable, least-cost and minimal environmental impact supply for its customers. The Company's supply planning process provides it with an organized method for analyzing the need for additional resources, identifying new options and reevaluating previous decisions in light of changed circumstances (see Exh. NEGC-1, at 35).

The Company uses the SENDOUT® linear programming ("LP") optimization model to calculate the least-cost dispatch of existing and incremental resources to meet the Company's load requirements (id.). The SENDOUT® model can also be used to identify what type of supply resource is needed in the event that resources are determined to be inadequate in meeting forecasted requirements (i.e., whether baseload, seasonal, or peaking supplies would be most appropriate in meeting the identified need) (Exh. NEGC-1, at 35). The same model was used by the Company to determine the resources used to supply the five forecasted normal years in Table G-22N and the design sendout for the five years of the forecast in Table G-22D (Exh. NEGC-1, at Schedule 5-6).

Upon determining that there is an incremental need for pipeline capacity, storage capacity or peaking capacity through the use of the SENDOUT® model, the Company considers a wide scope of potential resource options including pipeline supplies, supplemental supplies and DSM resources to satisfy the identified need (Exh. NEGC-1, at 41-44, Schedule 6-1; Exh. DTE-2-71). Through a request for proposals, the Company then looks to potential qualified vendors to meet the need on an overall least-cost basis,

consistent with the Company's cost and non-cost criteria. The Company generally evaluates new resources based on cost and non-price characteristics, including reliability, availability date, diversity of supply, flexibility, financial viability and other relevant ancillary criteria that may apply to a particular supply source.

D. Conclusion

The Company's supply plan shows that it has adequate resources to meet its normal-year, design-year, design-day and cold-snap requirements. The Company's supply planning process provides for the development of an adequate, low-cost and low-environmental impact resource plan. The Company's supply planning process enables it to identify and evaluate a full range of supply options using a least-cost portfolio consistent with environmental impact.

V. CONCLUSION

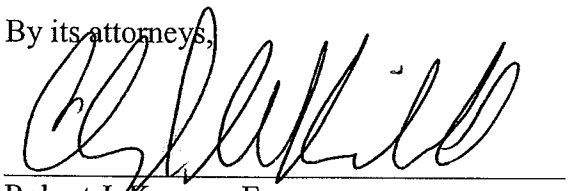
The probabilistic cost/benefit analysis used by the Company to develop its planning standards demonstrates that it has developed and consistently applied an appropriate methodology to select its normal-year, design-year and design-day standards which is based on an adequate assessment of the appropriate level of reliability as well as an assessment of the tradeoffs between cost and reliability. Colonial Gas Company, 23 DOMSC 351, at 369 (1991). Accordingly, the Company has demonstrated that its normal-year, design-year and design-day standards are reviewable, appropriate and reliable. In addition, the Company's use of multiple regression analysis to forecast its gas sendout requirements over the forecast period represents a reasonable forecast methodology which is reviewable, appropriate and reliable.

Accordingly, for all of the reasons stated above, the Company requests that the Department approve its Long-Range Forecast and Resource Plan submitted pursuant to G.L. c. 164, § 69I.

Respectfully submitted,

NEW ENGLAND GAS COMPANY

By its attorneys,



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Dated: September 29, 2004